

9 contacts the upper surface, is farther from the bottom surface than the lower surface is from the
10 bottom surface, provides at least a portion of the top surface and is transparent; and
11 a conductive trace that extends outside the insulative housing and is electrically
12 connected to the pad inside the insulative housing.

1 31. (Twice Amended) An optoelectronic semiconductor package device, comprising:
2 a semiconductor chip that includes an upper surface, a lower surface and four outer side
3 surfaces between the upper and lower surfaces, wherein the upper surface includes a light
4 sensitive cell and a conductive pad;
5 an insulative housing that includes a top surface, a bottom surface and peripheral side
6 surfaces between the top and bottom surfaces, wherein the insulative housing further includes
7 first and second insulative housing portions, the first housing portion is a single-piece that
8 provides the bottom surface, the peripheral side surfaces and a peripheral portion of the top
9 surface, contacts the lower surface and the outer side surfaces, is spaced from the light sensitive
10 cell and is non-transparent, and the second housing portion is a single-piece or double-piece that
11 provides a central portion of the top surface within the peripheral portion of the top surface,
12 contacts the first housing portion, the light sensitive cell and the conductive trace, is spaced from
13 the lower surface, is farther from the bottom surface than the lower surface is from the bottom
14 surface, is transparent and is exposed; and
15 a conductive trace that extends outside the insulative housing and is electrically
16 connected to the pad inside the insulative housing.

1 61. (Amended) An optoelectronic semiconductor package device, comprising:
2 a semiconductor chip that includes an upper surface, a lower surface and outer side
3 surfaces between the upper and lower surfaces, wherein the upper surface includes a light
4 sensitive cell and a conductive pad;
5 an insulative housing that includes a first single-piece non-transparent insulative housing
6 portion that contacts the chip, covers the lower surface and the side surfaces and is spaced from
7 the light sensitive cell and a second transparent insulative housing portion that contacts the first
8 housing portion and the light sensitive cell, is spaced from the lower surface and is exposed; and

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a conductive trace that extends through an opening in the first housing portion, extends
10 outside the insulative housing and is electrically connected to the pad inside the insulative
11 housing.

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1 66. (Amended) An optoelectronic semiconductor package device, comprising:
2 a semiconductor chip that includes an upper surface, a lower surface and outer side
3 surfaces between the upper and lower surfaces, wherein the upper surface includes a light
4 sensitive cell and a conductive pad;
5 an insulative housing that includes a first single-piece non-transparent insulative housing
6 portion that contacts the chip, covers the lower surface and the side surfaces and is spaced from
7 the light sensitive cell and a second transparent insulative housing portion that contacts the first
8 housing portion and the light sensitive cell, is spaced from the lower surface and is exposed; and
9 a conductive trace that extends through an opening in the first housing portion, extends
10 outside the insulative housing, is bent outside the insulative housing and is electrically connected
11 to the pad inside the insulative housing.

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1 71. (Amended) An optoelectronic semiconductor package device, comprising:
2 a semiconductor chip that includes an upper surface, a lower surface and outer side
3 surfaces between the upper and lower surfaces, wherein the upper surface includes a light
4 sensitive cell and a conductive pad;
5 an insulative housing that includes a first single-piece non-transparent insulative housing
6 portion that contacts the chip, covers the lower surface and the side surfaces and is spaced from
7 the light sensitive cell and a second transparent insulative housing portion that contacts the first
8 housing portion and the light sensitive cell, is spaced from the lower surface and is exposed; and
9 a conductive trace that extends through an opening in the first housing portion, extends
10 outside the insulative housing, does not contact an insulative material outside the first housing
11 portion and is electrically connected to the pad inside the insulative housing.

1 76. (Amended) An optoelectronic semiconductor package device, comprising:
2 a semiconductor chip that includes an upper surface, a lower surface and outer side
3 surfaces between the upper and lower surfaces, wherein the upper surface includes a light
4 sensitive cell and a conductive pad;
5 an insulative housing that includes a first single-piece non-transparent insulative housing
6 portion that covers the lower surface and the side surfaces and is spaced from the light sensitive
7 cell and a second transparent insulative housing portion that contacts the first housing portion
8 and the light sensitive cell, is spaced from the lower surface and is exposed; and
9 a conductive trace that includes a lead and a planar metal trace, wherein the lead extends
10 through an opening in the first housing portion, extends outside the insulative housing and is
11 electrically connected to the pad inside the insulative housing, and the planar metal trace contacts
12 and is not integral with the lead, extends across one of the side surfaces and does not extend
13 outside the insulative housing.

1 81. (Amended) An optoelectronic semiconductor package device, comprising:
2 a semiconductor chip that includes an upper surface, a lower surface and outer side
3 surfaces between the upper and lower surfaces, wherein the upper surface includes a light
4 sensitive cell and a conductive pad;
5 an insulative housing that includes a first single-piece non-transparent insulative housing
6 portion that covers the lower surface and the side surfaces and is spaced from the light sensitive
7 cell and a second transparent insulative housing portion that contacts the first housing portion
8 and the light sensitive cell, is spaced from the lower surface and is exposed; and
9 a conductive trace that includes a lead and a planar metal trace, wherein the lead extends
10 through an opening in the first housing portion, extends outside the insulative housing and is
11 electrically connected to the pad inside the insulative housing, and the planar metal trace contacts
12 and is not integral with the lead, contacts the first and second housing portions, extends across
13 one of the side surfaces and does not extend outside the insulative housing.

1 86. (Amended) An optoelectronic semiconductor package device, comprising:
2 a semiconductor chip that includes an upper surface, a lower surface and outer side
3 surfaces between the upper and lower surfaces, wherein the upper surface includes a light
4 sensitive cell and a conductive pad;
5 an insulative housing that includes a first single-piece non-transparent insulative housing
6 portion that covers the lower surface and the side surfaces and is spaced from the light sensitive
7 cell and a second transparent insulative housing portion that contacts the first housing portion
8 and the light sensitive cell, is spaced from the lower surface and is exposed; and
9 a conductive trace that includes a lead and a planar metal trace, wherein the lead extends
10 through an opening in the first housing portion, extends outside the insulative housing and is
11 electrically connected to the pad inside the insulative housing, and the planar metal trace contacts
12 and is not integral with the lead, contacts the first and second housing portions, overlaps the pad,
13 extends across one of the side surfaces and does not extend outside the insulative housing.

1 91. (Amended) An optoelectronic semiconductor package device, comprising:
2 a semiconductor chip that includes an upper surface, a lower surface and four outer side
3 surfaces between the upper and lower surfaces, wherein the upper surface includes a light
4 sensitive cell and a conductive pad;
5 an insulative housing that includes a top surface, a bottom surface and peripheral side
6 surfaces between the top and bottom surfaces, wherein the insulative housing further includes
7 first and second insulative housing portions, the first housing portion is a single-piece that
8 contacts the chip, covers the lower surface and the outer side surfaces and provides the bottom
9 surface, the peripheral side surfaces and a peripheral portion of the top surface and is non-
10 transparent, the second housing portion contacts the first housing portion and the light sensitive
11 cell, provides a central portion of the top surface within the peripheral portion of the top surface
12 and is transparent, and the top surface is exposed; and
13 a conductive trace that extends outside the insulative housing and is electrically
14 connected to the pad inside the insulative housing.

1 96. (Amended) An optoelectronic semiconductor package device, comprising:
2 a semiconductor chip that includes an upper surface, a lower surface and four outer side
3 surfaces between the upper and lower surfaces, wherein the upper surface includes a light
4 sensitive cell and a conductive pad;
5 an insulative housing that includes a top surface, a bottom surface and peripheral side
6 surfaces between the top and bottom surfaces, wherein the insulative housing further includes
7 first and second insulative housing portions, the first housing portion is a single-piece that
8 contacts the chip, covers the lower surface and the outer side surfaces and provides the bottom
9 surface, the peripheral side surfaces and a peripheral portion of the top surface and is non-
10 transparent, the second housing portion contacts the first housing portion and the light sensitive
11 cell, provides a central portion of the top surface within the peripheral portion of the top surface
12 and is transparent, the first housing portion is exposed at the top surface, bottom surface and
13 peripheral side surfaces, and the second housing portion is exposed at the top surface; and
14 a conductive trace that extends outside the insulative housing and is electrically
15 connected to the pad inside the insulative housing.

1 101. (Amended) An optoelectronic semiconductor package device, comprising:
2 a semiconductor chip that includes an upper surface, a lower surface and four outer side
3 surfaces between the upper and lower surfaces, wherein the upper surface includes a light
4 sensitive cell and a conductive pad;
5 an insulative housing that includes a top surface, a bottom surface and peripheral side
6 surfaces between the top and bottom surfaces, wherein the insulative housing further includes
7 first and second insulative housing portions, the first housing portion is a single-piece that
8 contacts the chip, covers the lower surface and the outer side surfaces and provides the bottom
9 surface, the peripheral side surfaces and a peripheral portion of the top surface and is non-
10 transparent, the second housing portion contacts the first housing portion and the light sensitive
11 cell, provides a central portion of the top surface within the peripheral portion of the top surface
12 and is transparent, the central portion of the top surface is recessed relative to the peripheral
13 portion of the top surface, and the top surface is exposed; and

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14 a conductive trace that extends outside the insulative housing and is electrically

15 connected to the pad inside the insulative housing.

1 106. (Amended) An optoelectronic semiconductor package device, comprising:
2 a semiconductor chip that includes an upper surface, a lower surface and four outer side
3 surfaces between the upper and lower surfaces, wherein the upper surface includes a light
4 sensitive cell and a conductive pad;

5 an insulative housing that includes a top surface, a bottom surface and peripheral side
6 surfaces between the top and bottom surfaces, wherein the insulative housing further includes
7 first and second insulative housing portions, the first housing portion is a single-piece that
8 contacts the chip, covers the lower surface and the outer side surfaces and provides the bottom
9 surface, the peripheral side surfaces and a peripheral portion of the top surface and is non-
10 transparent, the second housing portion contacts the first housing portion and the light sensitive
11 cell, provides a central portion of the top surface within the peripheral portion of the top surface
12 and is transparent, the central portion of the top surface is recessed relative to the peripheral
13 portion of the top surface, the first housing portion is exposed at the top surface, bottom surface
14 and peripheral side surfaces, and the second housing portion is exposed at the top surface; and
15 a conductive trace that extends outside the insulative housing and is electrically
16 connected to the pad inside the insulative housing.

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1 111. (Amended) An optoelectronic semiconductor package device, comprising:

2 a semiconductor chip that includes an upper surface, a lower surface and four outer side
3 surfaces between the upper and lower surfaces, wherein the upper surface includes a light
4 sensitive cell and a conductive pad;

5 an insulative housing that includes a top surface, a bottom surface and peripheral side
6 surfaces between the top and bottom surfaces, wherein the insulative housing further includes
7 first and second insulative housing portions, the first housing portion is a single-piece that
8 contacts the chip, covers the lower surface and the outer side surfaces and provides the bottom
9 surface, the peripheral side surfaces and a peripheral portion of the top surface and is non-
10 transparent, the second housing portion contacts the first housing portion and the light sensitive

11 cell, provides a central portion of the top surface within the peripheral portion of the top surface
12 and is transparent, and the top, bottom and peripheral side surfaces are exposed; and
13 a conductive trace that extends outside the insulative housing, is located between the
14 second housing portion and the chip inside the insulative housing, is spaced from the top surface
15 and is electrically connected to the pad inside the insulative housing.

1 116. (Amended) An optoelectronic semiconductor package device, comprising:
2 a semiconductor chip that includes an upper surface, a lower surface and four outer side
3 surfaces between the upper and lower surfaces, wherein the upper surface includes a light
4 sensitive cell and a conductive pad;
5 an insulative housing that includes a top surface, a bottom surface and peripheral side
6 surfaces between the top and bottom surfaces, wherein the insulative housing further includes
7 first and second insulative housing portions, the first housing portion is a single-piece that
8 contacts the chip, covers the lower surface and the outer side surfaces and provides the bottom
9 surface, the peripheral side surfaces and a peripheral portion of the top surface and is non-
10 transparent, the second housing portion contacts the first housing portion and the light sensitive
11 cell, provides a central portion of the top surface within the peripheral portion of the top surface
12 and is transparent, and the top, bottom and peripheral side surfaces are exposed; and
13 a conductive trace that extends outside the insulative housing, includes a top surface that
14 faces away from the chip and contacts the second housing portion inside the insulative housing,
15 includes a bottom surface that faces towards the chip and contacts the second housing portion
16 inside the insulative housing, is spaced from the top and bottom surfaces, extends through one of
17 the peripheral side surfaces and is electrically connected to the pad inside the insulative housing.

1 121. (Amended) An optoelectronic semiconductor package device, comprising:
2 a semiconductor chip that includes an upper surface, a lower surface and four outer side
3 surfaces between the upper and lower surfaces, wherein the upper surface includes a light
4 sensitive cell and a conductive pad;
5 an insulative housing that includes first and second insulative housing portions, wherein
6 the first housing portion is a single-piece that covers the lower surface and the outer side surfaces

7 and includes a top surface, a bottom surface, peripheral side surfaces between the top and bottom
8 surfaces, a peripheral ledge at the top surface, and inner side surfaces inside the peripheral ledge
9 opposite the peripheral side surfaces that extend from the top surface towards the bottom surface
10 and are spaced from the bottom surface and is non-transparent, and the second housing portion is
11 located within and recessed relative to the peripheral ledge, contacts the light sensitive cell, does
12 not extend midway between the upper and lower surfaces outside the chip and is transparent; and
13 a conductive trace that extends outside the insulative housing and is electrically
14 connected to the pad inside the insulative housing.

1 126. (Amended) An optoelectronic semiconductor package device, comprising:
2 a semiconductor chip that includes an upper surface, a lower surface and four outer side
3 surfaces between the upper and lower surfaces, wherein the upper surface includes a light
4 sensitive cell and a conductive pad;
5 CJS an insulative housing that includes first and second insulative housing portions, wherein
6 the first housing portion is a single-piece that includes a top surface, a bottom surface, peripheral
7 side surfaces between the top and bottom surfaces, a peripheral ledge at the top surface, and inner
8 side surfaces inside the peripheral ledge opposite the peripheral side surfaces that extend from
9 the top surface towards the bottom surface and are spaced from the bottom surface and is non-
10 transparent, the second housing portion is located within and recessed relative to the peripheral
11 ledge, contacts the light sensitive cell, does not extend midway between the upper and lower
12 surfaces outside the chip and is transparent, the first housing portion is exposed at the top
13 surface, bottom surface and peripheral side surfaces, and the second housing portion is exposed
14 at the top surface; and
15 a conductive trace that extends outside the insulative housing and is electrically
16 connected to the pad inside the insulative housing.

1 CJS 131. (Amended) An optoelectronic semiconductor package device, comprising:
2 a semiconductor chip that includes an upper surface, a lower surface and four outer side
3 surfaces between the upper and lower surfaces, wherein the upper surface includes a light
4 sensitive cell and a conductive pad;

5 an insulative housing that includes first and second insulative housing portions, wherein
6 the first housing portion is a single-piece that covers the lower surface and the outer side surfaces
7 and includes a top surface, a bottom surface, peripheral side surfaces between the top and bottom
8 surfaces, a peripheral ledge at the top surface, and inner side surfaces inside the peripheral ledge
9 opposite the peripheral side surfaces that extend from the top surface towards the bottom surface
10 and are spaced from the bottom surface and is non-transparent, and the second housing portion is
11 located within and recessed relative to the peripheral ledge, contacts the light sensitive cell and
12 the inner side surfaces, does not extend midway between the upper and lower surfaces outside
13 the chip and is transparent; and
14 a conductive trace that extends outside the insulative housing and is electrically
15 connected to the pad inside the insulative housing.

C17 136. (Amended) An optoelectronic semiconductor package device, comprising:
C17 2 a semiconductor chip that includes an upper surface, a lower surface and four outer side
3 surfaces between the upper and lower surfaces, wherein the upper surface includes a light
4 sensitive cell and a conductive pad;
5 an insulative housing that includes first and second insulative housing portions, wherein
6 the first housing portion is a single-piece that covers the lower surface and the outer side surfaces
7 and includes a top surface, a bottom surface, peripheral side surfaces between the top and bottom
8 surfaces, a peripheral ledge at the top surface, and inner side surfaces inside the peripheral ledge
9 opposite the peripheral side surfaces that extend from the top surface towards the bottom surface
10 and are spaced from the bottom surface and is non-transparent, the second housing portion is
11 located within and recessed relative to the peripheral ledge, contacts the light sensitive cell and
12 the inner side surfaces, does not extend midway between the upper and lower surfaces outside
13 the chip and is transparent, the first housing portion is exposed at the top surface, bottom surface
14 and peripheral side surfaces, and the second housing portion is exposed at the top surface; and
15 a conductive trace that extends outside the insulative housing and is electrically
16 connected to the pad inside the insulative housing.

1 141. (Amended) An optoelectronic semiconductor package device, comprising:
2 a semiconductor chip that includes an upper surface, a lower surface and four outer side
3 surfaces between the upper and lower surfaces, wherein the upper surface includes a light
4 sensitive cell and a conductive pad;
5 an insulative housing that includes first and second insulative housing portions, wherein
6 the first housing portion is a single-piece that covers the lower surface and the outer side surfaces
7 and includes a top surface, a bottom surface, uncurved peripheral side surfaces between the top
8 and bottom surfaces, a peripheral ledge at the top surface, and inner side surfaces inside the
9 peripheral ledge opposite the peripheral side surfaces that extend from the top surface towards
10 the bottom surface and are spaced from the bottom surface and is non-transparent, and the second
11 housing portion extends into the peripheral ledge, contacts the light sensitive cell, does not
12 extend midway between the upper and lower surfaces outside the chip and is transparent; and
13 a conductive trace that extends outside the insulative housing and is electrically
14 connected to the pad inside the insulative housing.

1 146. (Amended) An optoelectronic semiconductor package device, comprising:
2 a semiconductor chip that includes an upper surface, a lower surface and four outer side
3 surfaces between the upper and lower surfaces, wherein the upper surface includes a light
4 sensitive cell and a conductive pad;
5 an insulative housing that includes first and second insulative housing portions, wherein
6 the first housing portion is a single-piece that covers the lower surface and the outer side surfaces
7 and includes a top surface, a bottom surface, uncurved peripheral side surfaces between the top
8 and bottom surfaces, a peripheral ledge at the top surface, and inner side surfaces inside the
9 peripheral ledge opposite the peripheral side surfaces that extend from the top surface towards
10 the bottom surface and are spaced from the bottom surface and is non-transparent, the second
11 housing portion extends into the peripheral ledge, contacts the light sensitive cell, does not
12 extend midway between the upper and lower surfaces outside the chip and is transparent, the first
13 housing portion is exposed at the top surface, bottom surface and peripheral side surfaces, and
14 the second housing portion is exposed at the top surface; and

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a conductive trace that extends outside the insulative housing and is electrically

connected to the pad inside the insulative housing.
